

REMARKS

Claims 1-6 are currently pending.

Claims 1 and 5 have been amended for clarity.

Reconsideration in light of the following is respectfully requested.

Claim Rejections – 35 USC § 102

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Ogasawara et al. (U.S. Patent No. 4,784,978).

Ogasawara et al. is cited as disclosing a graphite capsule/vessel for producing boron nitride which has a cross-sectional area that allows reaction contents to be uniformly heated in order to yield boron nitride in a uniform consistency of crystallinity and purity. Applicants respectfully disagree.

Ogasawara et al. clearly describes a vessel with an inner diameter of 200 mm and a depth of 300 mm. The center of the material would therefore be 100 mm from either side and 150 mm from either the top or bottom. It is impossible for a cylinder which is 200 mm in diameter and 300 mm long to be uniformly heated. Furthermore, in every example Ogasawara et al. teaches the use of a cover over the crucible. The cover prohibits the reaction gaseous products from readily evolving as set forth in claim 1.

Ogasawara et al. fails to anticipate at least one element of claim 1 and therefore the rejection under 35 U.S.C. 102(b) is improper.

Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. 102(b) as being anticipated by Ogasawara et al. be withdrawn due to the failure of the cited reference to teach each and every limitation of the claimed invention.

Claim Rejections – 35 USC § 103

Claims 2-3 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogasawara et al. (U.S. Patent No. 5,908,795). The cited reference number corresponds to Nishio et al., not Ogasawara et al. In the response Applicant addresses both references to insure that the response is complete.

Nishio et al. teaches the use of a cylindrical cavity having a diameter of 60 mm and a height of 50 mm. Similarly, Ogasawara et al. teaches a cylindrical cavity having a diameter of 200 mm and a depth of 300 mm. The Office states that it would be obvious to one of skill in the art to optimize the crucible in order to provide improved purity, crystallinity and reduced porosity. The Office fails to point to any motivation for considering the shape and/or size of the vessel. The Office also fails to suggest any teaching within either reference wherein there is any correlation between the size and/or shape of the crucible and any of purity, crystallinity or reduced porosity.

Both Ogasawara et al. and Nishio et al. teach chemical compositions and the results obtained by variations therein. Nowhere, in either reference, is there any consideration for geometrical solutions. The only motivation for even considering alterations of the crucible are

found in the present application. Hindsight motivation is an improper basis for rejection and the rejection is therefore improper.

Both Ogasawara et al. and Nishio et al. teach against allowing the reaction gaseous products to evolve freely. Nishio et al. recites reaction pressures of 0.5 MPa to 6 Mpa which is in excess of 4 atmospheres. Ogasawara et al. recites, in every case, a cover over the crucible. Therefore, the references both teach against the claimed invention and a rejection based thereupon is improper.

Applicants respectfully submit that the rejection of claims 2, 3, 5 and 6 under 35 U.S.C. 103(a) as being unpatentable over Ogasawara et al. (alternatively Nishio et al.) is improperly based on an optimization wherein the only motivation for attempting such optimization is based on hindsight reconstruction from the teachings of the present specification. Furthermore, the combined teachings lead one of skill in the art in a direction contrary to the claimed invention. The rejection is therefore improper and withdrawal is earnestly solicited.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogasawara et al. (U.S. Patent No. 5,908,795) in view of White et al. (U.S. Patent No. 4,978,644). Again, Applicants address both Nishio et al. and Ogasawara et al. to insure a complete response.

The Office opines that the instant claim differs from Ogasawara et al. by the failure of Ogasawara et al. to disclose evolution of a gaseous product. White et al. is cited as disclosing that the porosity of a boron nitride compound is reduced by providing openings in the graphite

vessel/mold with reference to the text presented in column 10, line 55, through column 11 line 26.

Ogasawara et al. is specific to formation of pure boron nitride. Any details of the crucible, reaction mixture, heating cycle, etc. must be interpreted within the context of heating a boron source with a nitrogen source to obtain boron nitride.

Nishio et al. is specific to formation of a boron nitride containing material wherein additional materials are incorporated during formation of the boron nitride.

White et al. is specific to a reaction between boron nitride and a metal which migrates, or infiltrates, into the boron nitride.

Applicants are at a loss as to how one of skill in the art would combine these processes. Ogasawara et al. attempts to prepare pure boron nitride whereas Nishio et al. and White et al. attempt to prepare a mixture of boron nitride with additional materials. Clearly, the teachings of Nishio et al. and White et al. are contrary to Ogasawara et al.

The present invention is specific to the formation of pure boron nitride. One of skill in the art attempting such a task would not consider the teachings of Nishio et al. or White et al. since each is contrary to the intent and would lead in a direction contrary to this goal. Ogasawara et al. provides no teachings leading one to even consider optimization of the cavity shape and/or size. Therefore, one of skill in the art would be expected to utilize the cavity shape of Ogasawara et al. and based on the teachings therein focus on the chemical reaction not the geometrical considerations.

Applicants respectfully submit that the teachings of White et al. are contradictory to the desires of the instant invention and contrary to Ogasawara et al. White et al. and Nishio et al. both teach methods of forming impure boron nitride and therefore neither would be considered for teachings related to efforts to improve purity.

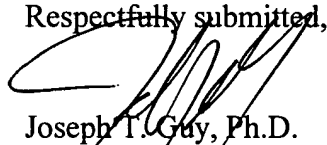
Applicants respectfully submit that the rejection of claim 4 under 35 U.S.C. 103(a) as being unpatentable over Ogasawara et al. (or Nishio) in view of White et al. is improperly based on teachings which are contradictory to the claimed invention and teach in a direction which is opposite thereto. Applicants respectfully solicit withdrawal of the rejection.

CONCLUSIONS

Claims 1-6 are pending in the present application. All claims are believed to be patentable and notice thereof is respectfully solicited.

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Respectfully submitted,



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